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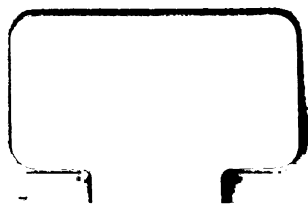
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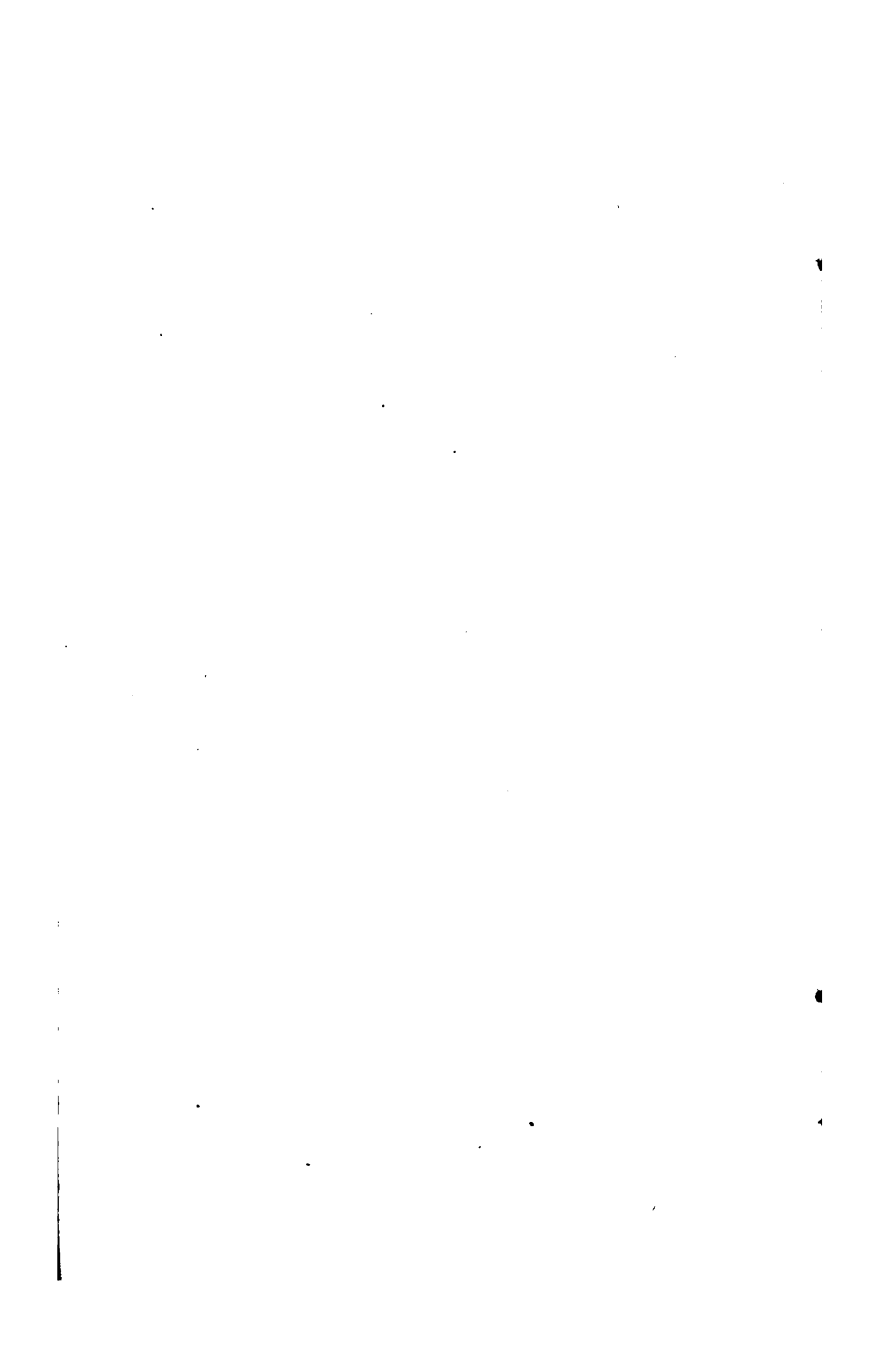
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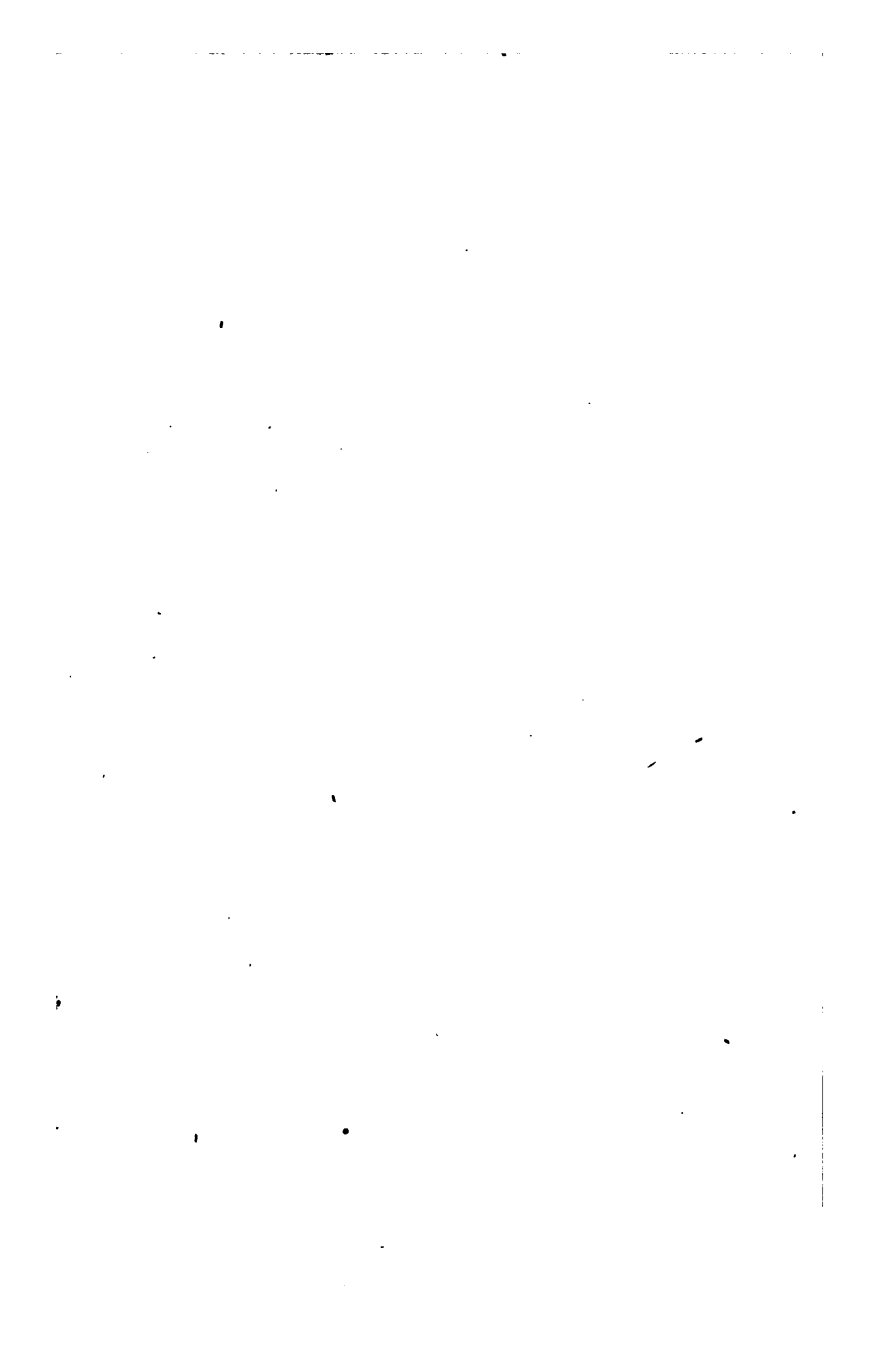
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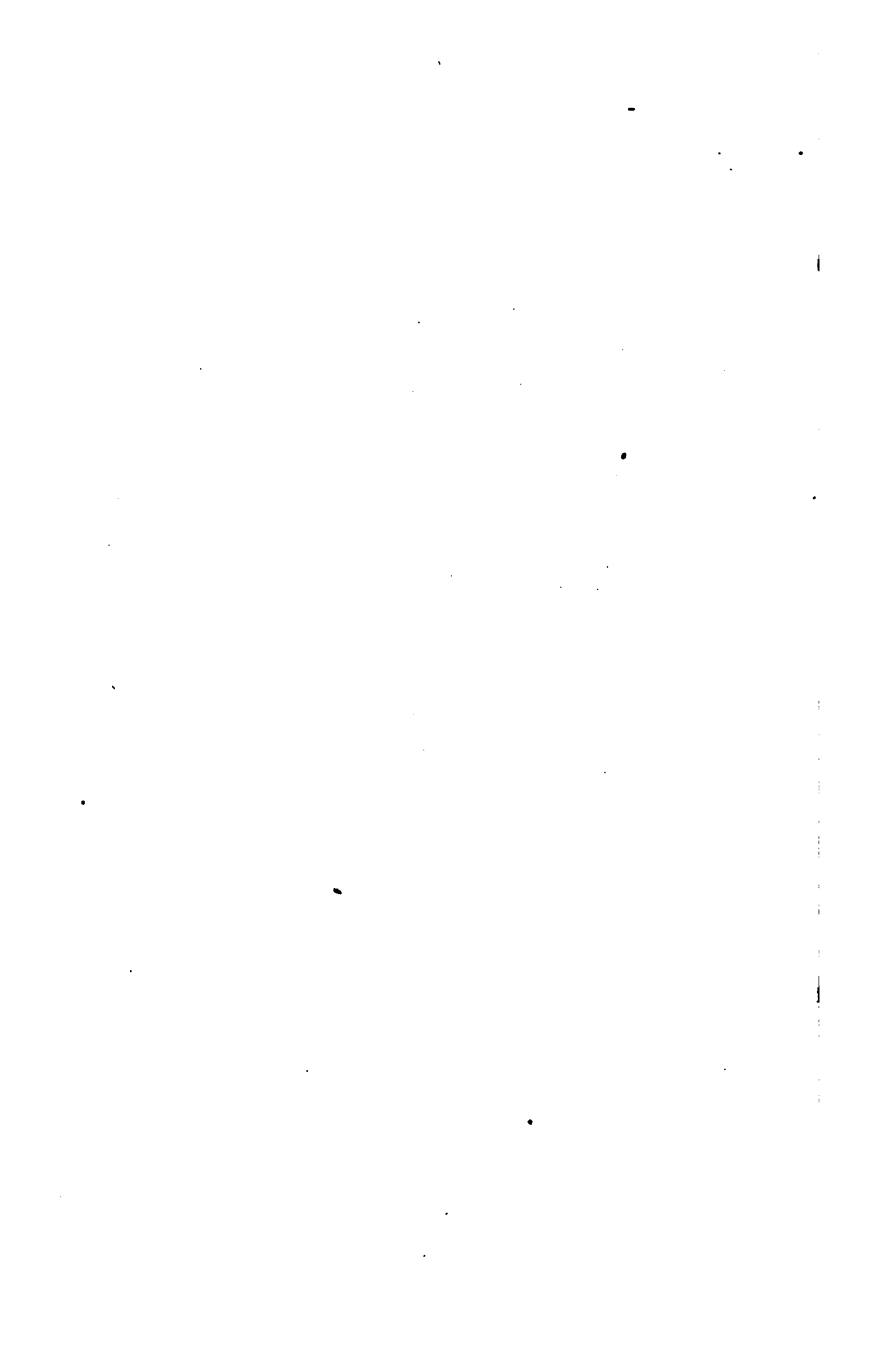
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## P R E F A C E .



THIS publication was originally a lecture on physical education, delivered before the American Institute in 1830. Having been informed, that these remarks had an influence in directing the attention of instructors and others to this important subject, and frequent applications having been made for copies, I have thought it might be useful to republish it. Additions are now made to the original text, for the purpose of more fully illustrating some of the most important means of attaining and preserving a good constitution.



ON THE IMPORTANCE  
OF  
PHYSICAL EDUCATION.



NATURE has destined that the physical and intellectual education of man should be conducted in very different modes. The culture of the mind requires the early, constant and well-directed efforts of an artificial system. That of the physical faculties is fully effected by the powers of nature. All that she asks, is, that we would leave her free and unconstrained. Unhappily, our state of civilization, while it has copiously supplied the means of intellectual improvement, has, nearly in the same ratio, raised obstacles to the development of the physical powers; and if we wished to restore to these their original spring, we should either revert to our primitive condition, or



find substitutes in art for the modes employed by nature.

Considerations of this description have presented themselves occasionally, as I have been called to observe the evils arising from the prevalent systems of education, and also from too steady an application to literary pursuits in those whose education was completed. At one period, my attention was directed to the unfavorable influence of studious and sedentary habits on health, by the occurrence of alarming indisposition among the members of the sacred profession, a number of whom became its premature and much lamented victims. At another, I witnessed the effects of a mistaken system, on the constitution of multitudes of the fairest work of creative power. I have had the misfortune to behold, when it was too late to apply a remedy, numerous instances of decay in the most vigorous constitutions, and of distortion in the best proportioned forms.

The importance of health to the regular exercise of the faculties of mind, as well

as those of body, is very well understood in theory, and very generally neglected in practice. We are daily seen to accumulate the treasures of science on intellects, where the physical machinery is disordered and made useless by the burden. What is the value of a brilliant genius, or a highly cultivated mind, to a weak and laboring frame? Let us suppose the existence of such a case in either of the learned professions. If it occur in the minister of religion, the organs of utterance are enfeebled, and the power of instructing his hearers is diminished or destroyed. The thoughts that should speak, remain unembodied in language, and the words that should burn, are extinguished on his lips. His usefulness is impaired at the moment of its full career; and even if his days are not cut off at an early period, he finds his mental abilities prematurely chained down by bodily weakness.

If it happen in the interpreter of the law, — the powerful workings of the mind in the investigation of obscure points, and the

elaboration of profound arguments, break down a sickly and yielding organization, and bring on a train of nervous affections and perverted imaginations, as permanent perhaps as life, and less supportable than death.

Again, a bad constitution in a professor of the healing art, keeps him at variance with all his duties. How can he heal others, in whom the springs of health act feebly and imperfectly? A laborious and active course of duty demands a bodily vigor that can endure all kinds of unseasonable labor; a steadiness of fibre, that can bear without agitation the sufferings of others, while attempting to relieve them; and a firmness of health, able to resist the attacks of those malignant epidemics, that prostrate a whole community.

When we regard the influence of a debilitated body on the more delicate sex, we find it not less distressing. A young female, at the age of twelve or fourteen, presents a beautiful figure, rosy cheeks, an airy step, and the fulness of life and happi-

ness in every movement. As she advances, her vivacity naturally lessens ; but, as if it would not be soon enough extinguished, it must be repressed by art. The lively motions of the body and limbs must be checked, the spirits must be restrained, and a sort of unnatural hypocrisy made to conceal every ingenuous movement. The activity of disposition is destroyed ; by confinement she loses the inclination for exercise, and passes from her school to a state of listlessness at home, or to frivolous and useless amusements, or perhaps to fresh tasks. By this regular repression of the physical powers, their energy is at last broken. Various organs lose their tone and their healthy action. Even the most solid parts are gradually impaired, and, being unable to support their ordinary burden, they sink under its weight, and bring on unchangeable deformity. Perhaps the exterior of health may remain a little longer, although the destroying principle is working in the heart. Should she be called on to be a mother, then comes the trial of her strength. The

fruit, so fair without, is found decayed within, when scarcely matured. Next, the roses of the countenance wither; the limbs are feeble and tottering; the vivacity is extinguished; the whole system undermined, and ready to fall on the first shock. Of what use now are all the finery of accomplishment, and the rich stores of literature and of science, the fruits of so many years' labor? They are all wasted, and perish unemployed.

What I have now stated as the result of the mode of female education in use at present, is not a picture of the imagination; it is a fair representation of what we are compelled to encounter, in almost daily experience.

My wish now is, to point out some of the principal ways in which literary pursuits may be destructive to health; and also to show what measures might be adopted to prevent these pernicious consequences.

Action is the object for which organization was created. If the organs are allowed to remain inactive, the channels of life be-

come clogged ; and the functions and even the structure get impaired. Young animals are filled with the desire of motion, in order that the fluids of the body may be forced rapidly through their tubes, the solids thus elongated and enlarged, and every part gradually and fully developed.

The immediate consequences of action on the bodily frame are familiar and visible to daily experience. Observe the sinewy arm of the mechanic. The muscles are large and distinct ; and when put in motion, they become as hard as wood, and as strong as iron. Notice those who are accustomed to carry considerable weights on the head. The joints of the lower limbs are close-set and unyielding ; the frame perfectly erect, and the attitude commanding. In the cultivator of the soil, though the form may be vitiated by neglect, you may observe that the appearance of every part is healthful, vigorous, and well fitted for labor.

While all of us are desirous of possessing the excellent qualities of strength, hardiness and beauty, how defective are our

systems of education in the means of acquiring them. In the present state of civilization, a child, soon after it can walk, is sent to school; not so much for the purpose of learning, as to relieve its parents of the trouble of superintending its early movements. As he grows older, the same plan is incessantly pursued and improved on, till a large part of his time is passed in sedentary pursuits and in crowded rooms. In the short intervals of confinement at school, the boy is allowed to follow the bent of his inclinations, and seek in play that exercise which nature imperiously demands. The development of his system, though not what it was destined to be, is attained in a certain way; and he is exempted from some of the evils, which fall heavily on the other sex.

The female, at an early age, is discouraged from activity, as unbecoming her sex, and is taught to pass her leisure hours in a state of quietude at home. The effects of this habit have been already spoken of in general terms; and I would now point out some of its results in a specific manner.

In the course of my observations, I have been able to satisfy myself that about half the young females brought up as they are at present, undergo some visible and obvious change of structure ; and of the remainder, a large number are the subjects of great and permanent deviations, while not a few entirely lose their health from the manner in which they are reared. The proportion of those who fall under the first description, I have already stated. The amount of the two last, it is impossible to ascertain with precision. I can venture to say, that it is sufficient to constitute a powerful claim on the attention of those engaged in the management of young persons.

The nature of all the particular affections and diseases thus induced, it would be impossible to describe in this place. I shall venture to direct your views to the details of only one of them.

The weight of the principal part of the body or trunk, the weight of the neck, the head and the two upper extremities, are supported by a single bony column, called



the spine. This column is about three inches in diameter. It consists of twenty-four pieces of bone placed one on the other ; and between each two is interposed a substance, somewhat resembling caoutchouc or India-rubber, for the purpose of giving it elasticity. This column is hollow, and contains the spinal marrow. Now the spinal marrow is the origin and source of the nerves, that convey the influence necessary to voluntary motion ; and they are sent off in pairs to the various muscles. The bony pieces of the spine are confined together by many small ligaments, by the elastic substance just spoken of, and by numerous muscles, affixed, not only to connect and support, but also to move them.

The bones of the spine, at an early period of life, are themselves in part composed of an elastic, cartilaginous or gristly substance ; and are always of a porous and sponge-like texture. In consequence of this kind of organization, the spinal column possesses much elasticity and flexibility, which enable it to yield and to move in

different directions, and expose it to receive permanent flexures, when there is a deficiency of natural strength in its composing parts.

Causes which affect the health and produce general weakness, operate powerfully on this part, in consequence of the complexity of its structure, and the great burden it supports. When weakened, it gradually yields under its weight, becomes bent and distorted, losing its natural curves, and acquiring others, in such directions as the operation of external causes tend to give it; and these curves will be proportioned in their degree and in their permanence, to the producing causes. If the supporting part is removed from its true position, the parts supported necessarily follow, and thus a distortion of the spine effects a distortion of the trunk of the body.

The change commonly begins at the part which supports the right arm. The column bends towards the right shoulder, forms a convexity on the side where the shoulder rests, and thus elevates the right higher than the other. This elevation, or as it is

commonly called, growing out of the shoulder, is the first phenomenon that strikes the friends of the patient. Often when observed, the shoulder has already undergone a considerable change of position; and the change is not confined to the shoulder, nor to the portion of spine immediately connected with it. On examination, it will be discovered that the curvature to the right in the upper part of the column, is accompanied, as a natural consequence, by a bend of the lower part to the left, and a correspondent projection of the left hip. It is perfectly obvious, that the inclination of the upper part of a flexible stick to one side, will leave the lower part on the other; and when, by this inclination, the vertical support is lost, a disposition to yield at the curving points will continually increase, until it be counteracted by some other power. Thus it happens, then, that any considerable projection of the right shoulder will be attended by a correspondent projection of the left hip.

The rising of the shoulder involves other

changes in the osseous fabric. For, as the spinal bones support the ribs, when these bones project, they necessarily push forwards the ribs dependent on them. These ribs form the frame of the chest, and of course the right side of the chest is projected forwards, and causes a deformity in the fore-part of the body. Nor do the changes stop here. The posterior ends of the ribs being pushed forwards, and the anterior ends being confined to the sternum or breast-bone, the right edge of the sternum will be drawn forwards, and the left edge consequently turned backwards. The fore-parts of the left ribs will be gradually forced inwards or backwards, and thus the left side of the chest distorted and contracted.

I am aware how difficult it is to have a distinct notion of these intricate changes in the human machinery, without an examination of the parts concerned in them ; but it is my duty to represent the train of phenomena as they exist in nature ; and I think they are sufficiently intelligible to excite consideration and inquiry.

Perhaps it may be imagined, that the cases I have described are of rare occurrence, that we have no occasion to alarm ourselves about a few strange distortions, the consequence of peculiar and accidental causes. If such were in fact the truth, I would not have occupied your time with the minute detail of these unpleasant subjects. Unhappily they are very common. I feel warranted in the assertion already intimated, that of the well-educated females within my sphere of experience, about *one half are affected with some degree of distortion of the spine*. This statement will not be thought exaggerated, when compared with that of one of the latest and most judicious foreign writers. Speaking of the right, lateral curvature of the spine, just described, he tells us, 'It is so common, that out of twenty young girls who have attained the age of fifteen years, there are not two who do not present very manifest traces of it.'\*

\*Lachaise, Sur les Courbures de la Colonne Vertébrale. p. 23.

As the bones serve to contain most of the great organs, any change in their forms will be likely to produce changes in the condition and healthy action of these organs. The spine gives lodgment, as has been said, to the spinal marrow ; and this sends out nearly all the nerves that carry the influence of voluntary motion, and many of those that convey energy to the great organs of respiration, circulation and digestion. When the containing part is distorted, the part contained is likely to be disturbed, and this disturbance must produce important effects on the nerves issuing from it, and of course on the organs to which these nerves are distributed. If the compression be slight, the operations of the organs will be partially disturbed. Hence proceed shortness of breath ; palpitation of the heart ; the phenomena of indigestion, flatulence, acidity, &c. These again give rise to the uncomfortable feelings called nervous ; though I believe they are sometimes the direct consequence of partial compression of the spinal marrow. When

this pressure is considerable, the bad consequences are more obvious and formidable. In such instances, the muscles supplied with nerves from the part below that compressed, lose their activity. The circulation in the lower limbs is retarded, and they grow cold and livid, and swell. Sometimes even a complete paralysis, or loss of the power of motion, occurs in one or in both of these extremities.

The ribs and the breast-bone enclose and guard, as we have said, the organs of the chest. Their position being altered by the deviation of the spine, the cavity they form becomes deranged. Its left part, where the heart is placed, being diminished in extent, this organ is embarrassed in its movements, and striving to relieve itself, produces painful and dangerous palpitations, and a general disturbance in the circulatory system. The lungs, for the same reasons, cannot fully expand in the effort of inspiration. This function is partially performed, and the blood imperfectly oxygenated—an irregularity of itself sufficient to

bring on a low state of health, and a disposition to disease.

The want of conformity between these organs and the bones they are in contact with, causing interference between the parts, an irritable condition of the lungs may be engendered, disposing to acute inflammation, or to the slow development of chronic disease.

Having given some notion of the nature of the affections brought on by mistakes during the time of education, I shall advert now to their causes.

The general causes of these derangements are those things that weaken the constitution. They may be physical or mental. Among the most important physical causes, are want of the exercise proper to develop the powers of the body, the taking of food, improper in quantity or quality, and many other causes of inferior importance. The mental causes may be a too constant occupation of the mind in study; the influence of feelings or passions of a depressing nature, &c.



The facts, that show the want of exercise to be one of the greatest causes of these affections and of the weakness that induces them, are very numerous. On the one side, we observe that young people brought up to hardy and laborious occupations, whether they are males or females, do not suffer in this way. The sons and daughters of farmers and laborers, for example, never exhibit the deformities spoken of, except in cases where there is a great scrofulous defect, by inheritance.

A still more remarkable fact of a general nature may be seen on a comparison in this respect between the two sexes. The lateral distortion of the spine is almost wholly confined to females, and is scarcely ever found existing in the other sex. The proportion of the former to the latter is at least nine to one. In truth, I may say that I have rarely witnessed a remarkable distortion, of the kind now spoken of, in a boy. What is the cause of the disparity? They are equally well formed by nature; or if there be any difference, the symmetry of

all parts is more perfect in the female than in the male. The difference in physical organization results from a difference of habits depending upon school education. It is not seen till after this process is advanced. The girl, when she goes from school, is, as we have before said, expected to go home and remain, at least a large part of the time, confined to the house. As soon as the boy is released, he begins to run and jump, and frolic in the open air, and continues his sports till hunger draws him to his food. The result is, that in him all the organs get invigorated, and the bones of course become solid ; while a defect exists in the other sex, proportionate to the want of physical motion.

A question may fairly be asked why these evils are apparently greater now than formerly, when females were equally confined? The answer, in reference to the young females of our country, is, that they then took a considerable share in the laborious part of the domestic duties ; now, they are devoted to literary occupations, of

a nature to confine the body and require considerable efforts of the mind.

I shall not, in this place, say anything of the second of the physical causes of weakness, spoken of, as it will be adverted to hereafter. The next of these causes, which presents itself to our view, is of a moral nature ;—the influence of too great occupation of the mind in study, and that of feelings and passions of a depressing nature.

The operation of mental causes on the bodily frame is not unknown to any of us ; though they may not perhaps have been thought, in regard to education, to be of very great importance. As it is not in my power to enter fully into the subject, I would barely present it for your consideration.

The effect of anxiety, grief, and other feelings, in diminishing strength and wearing away health, are quite familiar. The loss of property and of friends, has been known to bring on diseases ; and it has sometimes happened, that an agreeable reverse or a favorable incident has speedily

removed them. Confidence in a physician is a great help towards receiving benefit from his prescriptions ; and many of the cures wrought by empirical or quack medicines, are to be attributed rather to the operation of the mind, than to the action of the medicines on the disease.

The production of physical changes in a sudden and sensible way, by the action of moral causes, is comparatively rare, and very difficult to comprehend. Yet medical men do sometimes have an opportunity of observing changes effected by this power, which might appear incredible, and almost miraculous, to those not aware of the force of mental operations on the human organs. I could adduce many such cases. Perhaps it will be proper to state one or two in detail.

When, some years ago, the metallic tractors were in the height of their reputation for the cure of diseases by external application to the part affected, the following experiment was performed by Dr. Haygarth, of Bath. Two tractors were prepared,

not of metal, but of a substance different from the genuine tractors, and made to resemble them. These were applied, in a number of instances, with all the good effects of the real tractors. Among other remarkable cures was that of a person with a contraction of the knee joint, from a disease of six months' duration. After a few minutes' application, this man was directed to use his limb, and, to the surprise of all present, he was able to walk about the room. Such instances are not very unusual. Many empirics succeed by calling into action the same principle. The patient, after a number of manipulations of the part affected, is directed to make use of his limb; and though this call on his imagination does not infallibly succeed, it is not wonderful that it occasionally does so.

I will relate another case of this kind. Some time since, a female presented herself to me, with a tumor, or swelling of the submaxillary gland of the neck, which had become what is commonly called a wen. It was about the size of an egg, had lasted

two years, and was so very hard, that I considered any attempt to dissipate it by medicine to be vain, and advised its removal by an operation. To this the patient could not bring her mind ; therefore, to satisfy her wish, I directed some applications of considerable activity to be made to the part, and these she pursued a number of weeks, without any change. After this, she called on me, and, with some hesitation, begged to know, whether an application recommended to her would in my opinion be safe. This consisted in applying the hand of a dead man three times to the diseased part. One of her neighbors now lay dead, and she had an opportunity of trying the experiment, if thought not dangerous. At first, I was disposed to divert her from it ; but, recollecting the power of the imagination, I gravely assured her she might make the trial without apprehension of serious consequences. A while after, she presented herself once more, and, with a smiling countenance, informed me she had used this remedy and no other since I saw her ;

and, on examining for the tumor, I found it had disappeared.

The possibility of operating powerfully on the corporeal organization by moral causes being established, it is clear that the long exertion of intellectual efforts, and still more the frequent action of depressing passions, may, and even must, have a great influence on the condition of the body, at the flexible period when education and growth are going on together.—A close and constant occupation of mind, too long continued, lessens the action of the heart; and a languid circulation, thus being induced, prevents the full growth of the body. Depressing passions act more conspicuously. You may possibly have noticed, though the case is rare in this country, the condition of children subjected to a persevering system of harshness at home. They are pale and shrivelled, and their growth is checked.

In the present modes of education, great pains are taken to excite the imagination by competition. These efforts are attended

with but too much success in susceptible minds. An anxiety to excel becomes the predominant passion. The health, the sports, and too often the friendships of youth are sacrificed to the desire of surpassing those around. When this becomes an all-absorbing passion, the result is most unfriendly to physical organization ; and a multitude of fine constitutions are ruined by it, in both sexes.

Whether any proper substitute can be found, in our sex, for competition and rivalry, I must leave to others to decide. So far as my experience extends, I should give an affirmative answer ; and while I do not pretend to be a very competent judge in the case, it is fair to say, that the habit of giving public instructions for more than twenty years, has afforded me some conclusions of a satisfactory nature.

The application of the system of rivalry to the softer sex, I speak with submission to greater experience, appears to me fraught with mischief. It inflames the imagination, festers the passions, and poisons the happi-



ness of the brightest days of life ; and since the very highest grade of literary acquirement is not essential to the duties of the sex, it seems as unnecessary as it is pernicious.

I have just made a question whether there is a substitute, which is sufficiently practical to be of general use. I do not know that there is ; and if none exists, I think the ingenuity and intelligence of instructors could not be employed on a more important subject, than in devising such substitute. The spirit of improvement has, I imagine, already discovered that the reasoning process may be generally employed with great success in the instruction of young persons. I know individuals, who use it to a considerable extent, and with the most happy results. They endeavor to enforce on their pupils the doctrine that the path of duty is the most easy, and most for the interest of the individual to pursue. They do this by conversation and by argument ; and the process succeeds with those who are capable of being influenced in any

way, — and why should it not? Children of the earliest age are capable of feeling the force of reason; and I believe it will generally be found that they are under the power of their parents, rather in proportion to the employment of this agent, than to that of the rod or any other compulsory means. If they understand reason, at so early a period, surely they cannot lose their susceptibility to it, at one more advanced. There are, I know, minds, on which the powers of language make no impression, and all the weapons of argument fall as if pointless. But these are to be considered as exceptions to general laws — cases in which all the means of severity and kindness equally fail. They should not cause discouragement. Patience is the everlasting motto of the instructor. With it he performs wonders — without it he can do nothing.

The remarks made above, will give some notion of the most important of what I conceive to be general causes of ill health and imperfect growth, during the educating process.

It may not be useless to say a few words on some of the immediate causes of spinal distortion, which may be called local, in opposition to the former.

The most obvious of the local causes are bad postures of the body and limbs. The habit of bending the neck, while writing or drawing, gradually compresses the vertebræ, and the intervertebral substance on their anterior part, and causes a permanent change in the form of this part of the spinal column. This distortion is so very common among us, that we are apt to consider it a natural formation. In fact, however, it is entirely artificial in a great number of instances. Sometimes it is the consequence of negligence, and not unfrequently of timidity. Whether it tends to impair the health, always, I will not say — that it sometimes does so, I am certain ; and its effect in deforming the shape is even greater than a moderate degree of lateral curve.

The immediate cause of the lateral curve of the spine to the right, opposite to the right shoulder, is the elevation and action

of the right arm in drawing and writing. This posture pulls the part of the spinal column to which the muscles of the right arm are fixed, to the right side. The convexity of the spine thus produced keeps the right shoulder elevated, and the left consequently depressed. The lower part of the column is thrown to the left side; and this displacement being favored by the disposition to rest on the left foot, while standing to speak or read, there comes to be a permanent projection of the left hip. The postures employed in practising on some musical instruments, sometimes bring on these distortions; as for example, a great use of the harp favors the disposition to lateral curvature, from the constant extension of the right arm.\*

\* For many years I have in my anatomical lectures been in the habit of recommending, that children should be taught by their parents to use the left hand equally with the right. This habit will in a great number of instances prevent the occurrence of the distortion mentioned in the text, and preserve the lateral symmetry of the body. It would also give a valuable resource in case of those injuries, which in every one temporarily, and in some permanently, impair the use of the right arm.

Having adverted to the nature and the causes of some of the defects that arise from want of attention to physical education, I shall now throw out some hints, as to the modes in which it may be improved.

Nature, as we have before said, if left to herself, is all-sufficient to the development of physical organization. But we live in an artificial state — a state that continually thwarts the course of the native dispositions of the animal economy ; and as we must abandon the advantages of these, we must seek for substitutes in an artificial process.

The principles which should form the basis of such a process, will readily be seen, on attending to the nature and the causes of these defects. We shall observe that the remedy, or rather the preventive means, lies in a certain regulation of the sentiments and passions and intellectual operations ; in promoting bodily activity ; in a salutary regimen, and in some other inferior considerations. In regard to the first of these, that is, to what relates to the mind, I have already said all I intend at this time ; and I shall now advert to the others.

Towards a perfect system of education, it is necessary there should be a balance preserved between physical and intellectual cultivation. When the mind is closely occupied, the body should be carefully guarded. If the pursuits of the former are severe and absorbing, those of the latter should be cheerful and relaxing. Instead, then, of abandoning the physical to the intellectual culture, it should be increased in the same ratio, and followed with the same earnestness.

Exercise is so material to physical education, that it has sometimes been used synonymously, though it really constitutes only a part of it. In order that exercise may have its due operation, it must begin at the earliest period of life, and of course, the parent must, in this, act the part of instructor. He must take pains to have the infant carried into the air, every day, and in every season ; for, whatever may be the dangers of such a course, they are in the end less than those incident to the accidental exposures of a delicate constitution.

In the earlier years, the dress should be arranged so as to allow that use of the body and limbs, to which nature prompts, with freedom, and without impropriety. When children are sent to school, care should be taken that they are not confined too long. Children under fourteen should not be kept in school more than six or seven hours a day ; and this period should be shortened for females. It is expedient that it should be broken into many parts ; so as to avoid a long confinement at one time. Young persons, however well disposed, cannot support a restriction to one place and one posture. Nature resists such restrictions ; and if enforced, they are apt to create disgust with the means and the object. Thus children learn to hate studies that might be rendered agreeable, and they take an aversion to instructors, who would otherwise be interesting to them.

The postures they assume while seated at their studies, are not indifferent. They should be frequently warned against the practice of maintaining the head and neck

long in a stooping position ; and the disposition to it should be lessened by giving a proper elevation and slope to the desk ; and the seat should have a support or back of a few inches, at its edge. The arms must be kept on the same level ; and there should be room to support them equally, or the right will be apt to rise above the left, from its constant use and elevation. A standing posture in writing and studying, is not commendable for young persons. The secret of posture consists in avoiding all bad positions, and avoiding all positions long continued.

The ordinary carriage of the body in walking should be an object of attention to every instructor. How different are the impressions made on us by a man, whose attitude is erect and commanding, and by one who walks with his face directed to the earth, as if fearful of encountering the glances of those he meets ! Such attentions are even of great importance to the fairer sex, where we naturally look for attraction in some form or shape. If nature has not given beauty of face to all, she has given



the power of acquiring a graceful movement and upright form — qualities more valuable and more durable than the other. These qualities are lost or gained at school ; and of course they lie, to some extent, within the control of the instructor. It seems to me it would afford a great addition of satisfaction to the superintendent and guardian of the rising population, to be able to send out to the world his annual recruits, not only well imbued with knowledge and virtue, but also endowed with a handsome form and graceful manners.

The influence of an upright form and open breast on the health, has been, I think, sufficiently explained ; and what may be done to acquire these qualities, is shown by many remarkable facts, one of which I will mention. For a great number of years, it has been the custom in France, to give to young females of the earliest age, the habit of holding back the shoulders, and thus expanding the chest. From the observations of anatomists lately made, it appears that the clavicle, or collar bone, is actually longer in females of the French nation than in

those of the English, although the latter are the best formed people. As the two nations are of the same race, as there is no other remarkable difference in their bones, and this is peculiar to the sex, it must be attributed, as I believe, to the habit abovementioned, which, by the extension of the arms, has gradually produced a national elongation of this bone. Thus we see that habit may be employed to alter and improve the solid bones. The French have succeeded in the development of a part, in a way that adds to health and beauty, and increases a characteristic that distinguishes the human being from the brute.

As young persons advance in age, and as the disposition to motion naturally diminishes, it becomes important to encourage and provide for it, especially in females, and in young men of studious character. Instead of restraining their movements, and blaming the disposition to frolic, they should be allowed and advised to it, at proper times, and in becoming modes.

Next to walking in the open air, the best exercise for a young female is dancing.

This brings into action a large part of the muscles of the body and lower limbs, and gives them grace and power. The mode in which I wish to recommend its use, is not in balls and crowded assemblies, but at home, alone, or with two or three friends, or in the domestic circle. As this practice does not give motion to the upper limbs, and as the exercising them is too apt to be neglected, it is important to provide the means of bringing them into action, as well to developpe their own powers, as to enlarge and invigorate the chest, with which they are connected, and which they powerfully influence. The best I know of is the use of the triangle.\* This admirably exerts the upper limbs and the muscles of the chest, and, indeed, when adroitly employed, those of the whole body. The plays at ball with both hands, and that of dumb bells, are useful. The parallel bars afford a very

\* The triangle is made of a stick of walnut wood, four feet long, an inch and a half in diameter. To each end is connected a rope, the opposite extremities of which being confined together, are secured to the ceiling of a room, at such height as to allow the motion of swinging by the hands.

fine exercise for the muscles of the body and upper limbs. Battledoor I should recommend to be played with the left hand as well as the right, a habit, like all others, acquired by due practice. While I particularly mention these, I should advise as great a diversity as possible, in exercise and amusement ; so that, when the mind or the muscles get fatigued with one, they may take up another with fresh ardor. Every seminary of young persons should be provided with the instruments for these exercises. They are not expensive, occupy but little room, and are of unspeakable importance.

While active exercises should occupy time sufficient to excite the circulation, and gently to agitate the organs, there must also be an occasional relaxation. At proper intervals, the whole muscular apparatus should be allowed to repose. I do not mean that the young lady should sleep during the day ; but I wish to advise a graceful attitude on a couch or sofa, as a necessary alternation to muscular or mental effort.

The remarks last made have reference

principally to the exercises of young ladies, who are more likely to suffer in this respect, in our plans of education, than the other sex.

The necessity of cultivating the physical powers in young men, is sufficiently understood. The establishment of gymnasia through the country, promised, at one period, the opening of a new era in physical education. The exercises were pursued with ardor, so long as their novelty lasted ; but, owing to not understanding their importance, or some defect in the institutions which adopted them, they have gradually been neglected and forgotten, at least in our vicinity. The benefits which resulted from these institutions, within my personal knowledge and experience, far transcended the most sanguine expectations. I have known many instances of protracted and distressing affections wholly removed ; of weakly organized forms unfolded and invigorated, and of the attainment of extraordinary degrees of muscular energy and elasticity in persons in health.

The diversions of the gymnasium should

constitute a regular part of the duties of all our colleges and seminaries of learning ; and, to give them the requisite power of excitement, the system of rewards, so dangerous when mismanaged in literary education, might be introduced without any ill effect.\* Our young men may surely find time to cultivate those exercises, which Cicero and Cæsar, and some of the most studious among the ancient and modern philosophers, considered necessary, and contrived to prosecute in the midst of their studies and affairs.†

\* I have known many instances of great increase of muscular vigor, and of the general health by the regular use of gymnastic exercises, even at an advanced period of life. Among these I might refer to a distinguished member of the legal profession, who first began the practice of gymnastics when nearly seventy years old. He acquired great additional vigor, lived to the age of eighty-four, in habits of constant activity, and died at this period in the most easy and tranquil manner.

† Cicero is described by Plutarch, as being, at one period of his life, extremely lean and slender, and having such a weakness in his stomach, that he could eat but little, and that not till late in the evening. He travelled to Athens, however, for the recovery of his health, where his body was so strengthened by gymnastic exercises, as to become firm and robust ; and his

If the gymnasium is deserted because it calls for too much effort, let me intreat them at least to adopt a regular plan of walking. Two hours a day must be devoted to this business without relaxation, unless they are willing to carry the mark of disorder in the face while young, and a dyspeptic, nervous, disabled frame through that part of life, which especially requires health and activity.

I have often been asked, how it is the German literati preserve their health without exercise. Some of them are known to pass most of their time in study, and think not of wasting their precious moments in taking care of their bodies. To this I reply; first, that they are careful to acquire a good

voice, which had been harsh, was thoroughly formed, and rendered sweet, full, and sonorous.

In regard to Julius Cæsar, the same author informs us, that he was originally of a slender habit of body, had a soft and white skin, was troubled with pains in his head, and subject to epilepsy; but, by continual marches, coarse diet, and frequent lodging in the fields, he struggled against these diseases; and used war, and the exercises and hardships therewith connected, as the best medicine against these indispositions.—*Sir John Sinclair.*

constitution by habits of activity while they are young. The organs are properly developed, and confirmed in healthy action. Secondly, they do not break down their strength by luxurious ways of living, and the free use of stimulant drinks, in early age. Thirdly, which is the great secret, they live most abstemiously. The digestive organs are not overburdened with food, and stand not in need of extraordinary efforts to relieve them.

Let those who are compelled to sedentary pursuits, seasonably lay aside one third of their ordinary food; and they will experience no loss of time in combating the horrors of dyspepsia.

The inhabitants of the Philadelphia Penitentiary, confined to a uniform regimen, which of course limits itself, enjoy uninterrupted health. Those who were diseased from bad habits before they became its tenants, are effectually cured after a short residence there.

Regulation of the food is of primary consequence towards the formation of a good constitution. The most common error in



relation to it, consists in the use of too much food. Nature has given us organs of a certain capacity, on the presumption that, being called on to manual labor, we should then require a large quantity of food. Muscular effort exhausts the strength, and requires renovation by nutritious substances; but when the muscular efforts are small, the quantity of nourishment required is comparatively trifling; and if, in consequence of the appetite, a large quantity is taken, the result will be pernicious, directly or indirectly. Parents are uneasy when their children eat but little, and would encourage them to eat against their inclination. No mistake can be more pernicious to health; and if persevered in, disease will infallibly result from it. When the child wants appetite, instead of being compelled to take food, it must be compelled to take exercise, unless positively ill, and then it must be compelled to take medicine.

The quantity of liquid given to young persons is decidedly injurious. The principal agent in the digesting process, is a solvent juice. The more this is diluted

with fluids, the weaker it is, and the less perfect the digestive action. Animal food should be sparingly taken by young persons who use little exercise; and children generally do not need it. Bread and milk, and fruit are the best articles for those who do not labor. Wine is highly pernicious to young persons. It is a slow but certain poison. Before the body has attained its full growth, there is an overplus of excitability; and if to this is added the powerful agency of wine, or any other stimulating drink, the constitution cannot fail to be hurt. Females are more injured by stimulating drinks than males, because their system is more susceptible of physical excitement. The nervous power is more energetic; the pulse and respiration are quicker; and the developement of animal heat greater. Hence, I suppose, it is, that they require less covering in cold weather; and suffer more inconvenience from the heat, than the other sex.

Females are unfortunately compelled by fashion to adopt partial and unequal coverings of the body. A part of the chest is

very much covered, while another part is wholly exposed. The dangers which spring from fashion are more easily pointed out, than avoided. They serve at least to place in a clearer light the necessity of inuring young females to exposure, and invigorating them by exercise.

There is one part of female dress, the dangers of which have been made known, but which still, I fear, continues to be practised; I mean the girting the chest.

In what notions of beauty this practice took its origin, I am unable to discover. The angular projections formed by a tightly drawn cord, are in direct opposition to the models of Grecian or Roman beauty. In the flowing robes of the Juno, the Vesta and Diana, every part is light and graceful. Nor have I been able to discover, in the representation of the Muses or the Graces, any habiliment which would lead us to believe they wore stays or corsets. The taste of the other sex is uniformly opposed to the wasp-like waist and the boarded chest. Yet, strange as it seems, there is scarcely a young lady of fifteen, who has

not imbibed a disposition for this species of application, and scarcely a well-dressed lady of any age, whose chest is not confined in such a manner as to impede the motions of respiration and the free use of the muscles of the upper extremities. It is true, we are constantly told that they are uncomfortable without these appendages; but this only shows, what great inconveniences we can, by habit, become accustomed to. The Indian nations, who consider the flattened forehead to be a beauty, confine the heads of their infants between two pieces of board corded together, and the child exists under this pressure and may grow up. Yet there can be no doubt that diseases are generated by it; that some lose their lives and others their intellects. Still the fashion continues from age to age; for I have now in my possession flattened heads, which must have lived some hundreds of years since, and others which have belonged to individuals of the existing generation.

Nature has so contrived the human chest that there is no superfluous play of the parts composing it. Its movements are just suf-

ficient to give such an expansion to the lungs and such an extent of oxygenation of the blood, as are adequate to the wants of the individual, under different occurrences. In females, the chest is shorter than in males; and to compensate for this, the motion of the ribs is naturally more extensive and more frequent. Whatever limits this motion, is therefore peculiarly injurious to the sex; especially as they are more disposed to consumption, and other chronic affections of the lungs. Now, the ligatures in the fashionable dress are placed precisely on that part, where the motion should be greatest; that is, below the middle of the chest. It is precisely here, that, in case of fracture of the ribs, when we desire to stop the movements of the chest, we apply a tight bandage; — though rarely do we venture to make it so tight as the ordinary corsets. The effect of such pressure, begun at an early period of life, will be understood from what has been stated in regard to the spine. The bones must yield to it; their shape becomes permanently altered; the lower part of the breast contracted; the

space destined by nature for the heart and lungs diminished; and what the fatal results of all this on these tender and vital organs are, every day's experience shows us. The influence on the health, though slow, is certain. It may not at once produce consumption; but it lays the foundation for ills it would pain you to hear, and me to describe. I will only say, by way of specification, that, among other diseases of which this is the fruitful germ, I have known three instances of perpetual headache, at last bringing on insanity and terminating in death. The immediate cause of the disease was the compression of the heart and great blood vessels, and the consequent accumulation of blood in the head.

As young ladies are disposed to this practice, probably by fancies communicated by their companions, those who have charge of them, should not only prohibit these applications—they should, for themselves, observe whether anything is wrong; and after the young ladies have reached the age when dress is considered a primary object, they should resolutely oppose every en-

croachment on the rights of the vital organs, beyond what is required by a decent attention to the prejudices of the day.\*

If I might call your attention to other topics of interest connected with this subject, I should advert to the constant use of cold bathing, especially the shower-bath, as very conducive to invigoration of the body, and to lessening the susceptibility to the injurious effects of cold on the surface of the skin. I would speak of the advantages of regular frictions over the whole surface, and especially the chest and the neck, those parts, which are constantly to be exposed to the air. The judicious use of the voice by reading aloud, I should highly commend. It invigorates the lungs, and gives action to the whole digestive apparatus; but I should not speak so favorably of singing — a delightful accomplishment, indeed, but only

\* Since this was written, the practice of tight lacing has diminished, and we now and then have an opportunity of seeing the female form in a dress, which does not conceal its natural symmetry and grace. It would be thought singular, if this pernicious practice, thus becoming unfashionable in the one sex, should have been adopted by the other.

to be pursued by those whose chests are ample, and pulmonary organs vigorous. These subjects I can barely allude to, without entering into the details of their particular application, having extended these remarks much beyond my original design.

Let me conclude by intreating your attention to a revision of the existing plans of education, in what relates to the preservation of health. Too much of the time of the better educated part of young persons, is, in my humble opinion, devoted to literary pursuits and sedentary occupations; and too little to the acquisition of the corporeal powers indispensable to make the former practically useful. If the present system does not undergo some change, I much apprehend we shall see a degenerate and sinking race, such as came to exist among the higher classes in France, before the revolution, and such as now deforms a large part of the noblest families in Spain; \* but

\* I am informed, by a lady who passed a long time at the Spanish court, in a distinguished situation, that the Grantees have deteriorated by their habits of living, and the restriction of intermarriages to their own rank,



if, as I trust it will, the spirit of improvement, so happily awakened, continue to animate those concerned in the formation of the young members of society, we shall soon be able, I doubt not, to exhibit an active, beautiful, and wise generation, of which the age may be proud.

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#### 1. DIGESTION.

THE renovation of organized structures is accomplished by the process of digestion. This, whether it take place in vegetables or animals, is effected by the assimilation of external substances constituting the food, which is appropriated to the structure to be repaired.

The digestive organs are very simple in vegetables. Food is taken from the earth by the radicles of the plant, circulated in its vessels, elaborated or digested in its leaves, and sent to the different parts of the plant for their support and development. In most to a race of dwarfs, and, though fine persons are sometimes seen among them, they, when assembled at court, appear to be a group of mannikins.

animals the apparatus of digestion is much more complicated. In the lower classes it is in truth but little more complex than in vegetables, but in the higher animals, and in man, it forms one of the most extensive parts of the animal economy.

The primary and most essential portion of the digestive apparatus in man is the stomach. Into this cavity articles of food are introduced in great variety, and these in the course of a few hours are gradually dissolved. The power, by which this solution is accomplished, has been ascertained to be a liquid exuded from the coats of the stomach, similar in its aspect to liquid saliva, and which has been denominated the gastric fluid or juice. The experiments of Spalanzani, Stevens, and others, and finally those of Dr. Beaumont on Alexis St. Martin, an individual, who had an aperture in his stomach from an accidental wound, have proved, that when food was introduced into an empty stomach, this exudation was seen to take place, in proportion to the quantity of food received into the organ, within certain limits. The food, brought

in contact with the interior of the stomach by the action of its muscular coat, and by the movements of respiration, is attacked by this liquid in successive portions, and gradually melted into a homogeneous mass.

In a healthy stomach a moderate meal is digested in four hours, and then the food is pushed by the stomach into the duodenum, a sort of second stomach, in which, and in the tube below, the nutritious liquid is first separated from the solid part of the food, then absorbed, and carried into the blood-vessels, and circulated through every part of the animal body. So that it may be said, that the whole of the drink taken into the stomach, and a considerable part of the solid food, ultimately make their way into the blood-vessels, and are circulated throughout the animal system.

It has been also observed, that when liquids were taken into the stomach at the same time with solids, the liquids were separated from the solids, and disappeared from the stomach in a short time. Both reasoning and observation have plainly shown, that while any considerable quantity

of liquid remains in the stomach, the gastric fluid is too much diluted to accomplish the solution of the food.

From the facts above mentioned we consider it to be established, that the taking of quantities of liquid at the same time with solid food does not promote the digestive process, but interferes with, and suspends it. Hence the swallowing of large quantities of fluid of any description, such as wine, tea, coffee, or even water, is not consistent with a healthy and speedy digestion. The practice of drinking at our meals is so universal a custom as to make it appear like a second nature, but it is in fact contrary to nature. Animals do not drink at the time they eat, but some hours after, and they generally take very small quantities of liquid, compared with that which is used by man. The savage in his native wilds takes his solid food, when he can obtain it, to satiety, reposes afterwards, and then resuming his chase through the forest, stops at the rivulet to allay his thirst.

The disadvantage of taking a large quantity of liquid must be obvious to all those

who consider that the digesting liquid is diluted and weakened, in proportion to the quantity of drink. Children especially, are much mismanaged in this particular. We begin at an early period of life to drench the stomach of a child with large quantities of milk and water, of simple water, or of some other liquid. The poor child suffers from the extensive distention of the stomach and complaining frequently, the mother presumes it is affected with worms, and many violent purges are given to destroy these supposed invaders. The digestive apparatus is thus weakened still more; chyle is imperfectly formed, the blood itself hence becomes weak and impure, and in this way the seeds of scrofula are developed.

All kinds of *stimulating* drinks are of pernicious effect in two ways: 1st, by diluting the gastric fluid, as above stated; 2d, by over-stimulating the stomach. When food is taken into the stomach, the inner coat of the organ is excited, and thereupon becomes reddened from an increased flow of blood; this is a natural excitement of the organ. When stimulants of any kind are

thrown into the stomach, it is over-excited at the time, and, like all other over-excited parts, suffers a proportionate debility afterwards. If then a quantity of alcohol and water, or wine, which is a mixture of alcohol, water, and some vegetable substance, are taken into the stomach at the same time with the food, the over-excitement must be injurious. It may not indeed produce immediate disease, or death, but it lays the foundation for the former, and shortens the road to the latter. A single excess or debauch takes off something from life, and when this excess is frequently repeated, even if not carried to habitual intoxication, the effect must be materially to diminish the term of existence. One of the effects of the over-excitement, produced by stimulant liquid on the inner coat of the stomach, is, a separation of the cuticle or epithelium, which guards its inner coat, and the formation of little canker spots in the interior of this organ. This was often observed by Dr. Beaumont in the stomach of St. Martin.

All alcoholic drinks have the property of

preventing the decomposition, and of course the digestion of food. This property it is, that enables us to preserve portions of the flesh of animals, when steeped in alcohol, for a great number of years.

Some physicians believe, that there is danger in suddenly abandoning the use of stimulant drinks. Most of the great English physicians appear to be of this opinion, and they seem to be particularly clear in regard to the ill consequences of the disuse of ardent spirits in those, who have become disordered by their habitual employment. In this country, where more has been said and done on this subject than in any other, a very great mass of experience has been accumulated. The results of this experience are, that persons in health and in disease, with certain exceptions, may safely break up the habit. We know of hundreds of instances, and there is reason to believe, that thousands exist, of a sudden and total abandonment of the use of ardent spirits, and of all the fermented liquors, without bad consequences. This mode has therefore been adopted generally, wherever the tem-

perance reform has extended itself, in preference to the gradual abandonment of these drinks.

This method has been based on a multitude of observations, tending to show, that the gradual disuse of habitual stimulants can rarely be accomplished. We therefore always recommend to those in health to break off the practice suddenly ; we also do it generally in cases of disease brought on by the use of these articles ; and by supporting the patient with small quantities of good nutritious food, we succeed in bringing him right, without resorting to the deleterious fluid. The worst cases of this description are those of delirium tremens occurring in drunkards from violent injuries, such as fractures and extensive wounds. In such instances the patient may be saved, if it is possible to save him by any means, by the use of opium.

Without going into further detail, we feel quite authorized to state as a general rule, that the use of wine and other stimulating liquids may be suddenly relinquished by persons in health, without bringing on dis-



ease, and that in the greater number of instances of those disordered by them, there is, on the whole, more safety in abandoning than continuing the practice.

The quantity of drink required for health and comfort is very small. In cold weather a pint of liquid in twenty-four hours is sufficient: in the hot seasons this quantity may be increased, but this increase is rarely necessary, when a reasonable amount of fruit can be obtained.

Moreover, the agent in the digestive process being a fluid, formed in limited quantity, it is obvious, that when the amount of solid food taken into stomach is too great in proportion to the quantity of this gastric liquid, the whole of the solid cannot be digested in time to prevent it from undergoing the acid or putrefactive fermentation. The fermentation thus generated is productive of every degree of suffering, especially a burning sensation in the stomach, foul breath, and frequent eructations of offensive gasses. Further, the existence of a putrified mass in the centre of the human body must, if it occur frequently, lay the foundation for a great variety of diseases.

The Author of Nature did not destine his offspring to be the victims of complicated and protracted diseases. In a state of nature, disease is comparatively rare; the conveniencies of social life, if rightly employed, would aid us in the prevention of many of those affections, to which the savage state is obnoxious. So that, instead of being less healthy than in a state of nature, we might be more so. To attain such a state, however, we should be compelled to alter our habits to a greater extent, than our social organization would admit. This change being impracticable, the next best thing to be done is, to take into view, that all that part of society, who are not called to daily and constant labor, constitute cases exceptional to those laws, which the Author of Nature has been pleased to establish for the whole race. By a due consideration of this exceptional state, as applied to ourselves, and a right accommodation of our habits to this state, we may prolong life, and avoid much suffering.

The quantity of food, then, is not to be regulated by our appetites, but by our occu-

pations. A great deal of exercise requires a great deal of food, little exercise will tolerate only a small portion of food ; and if we offend against this rule, we must expect to suffer some form of disease sooner or later. In a great number of instances we are able to trace the origin of diseases, at first view not connected with digestion, to derangements of this function. In the course of my professional experience, I have had occasion to witness many instances of acute disease originating from a single excess. A person much exposed to cold and wet, is more liable to be dangerously affected after taking an inordinate meal. Some species of typhus undoubtedly begin in disorders of the digestive apparatus ; for it has been established by Louis and others, that derangement of the bowels occasionally precedes the attack of fever, even at some distance of time. Gout, though generally produced by combined excess in eating and drinking, is, I have had occasion to notice, often the consequence of excessive eating. Scrofula likewise, though the disposition to it is generally hereditary, may be devel-

oped by an improper use of food.\* We could go on, and specify a great number of diseases, which undoubtedly take their origin from disorders of the stomach, liver, and intestines, brought on by the abuse of food, i. e. by a disproportion between the quantity of food and the quantity of exercise. Habitual temperance in the use of food is therefore indispensable to the healthy action of the physical powers.

From the preceding remarks it appears, that persons of different occupations require

\* Sir James Clark, one of the most able physicians of our times, in his *Treatise on Pulmonary Consumption and Scrofulous Diseases*, says, "An imperfect supply of food, or food of an innutritious quality, forms a very efficient cause [of Scrofula,] although we have rarely an opportunity of observing the effects of this alone; because when the means of procuring proper nourishment are wanting, other causes are generally in action at the same time, such as residence in ill-ventilated and dark apartments, exposure to cold from imperfect clothing, &c. ; all of which are often combined, and hence more speedily effect the deterioration of the health. But proper food, when taken in excess, or when of too exciting a quality, may also induce tuberculous cachexia in youth,—a circumstance which is not sufficiently attended to,—I may say not generally understood, even by medical men ; nevertheless I hold it to be a frequent

different quantities of food. The point we wish to ascertain is, what amount of food is necessary for those, who do not live by manual labor. Such persons generally consume three or four pounds in a day. That this quantity is too great, there can be no doubt, and of this a distinct proof is found in the following fact. The seamen in the British Navy were formerly allowed to eat as much as they desired; of late years,

cause of Scrofula. The adaptation of the food, in quality and quantity, to the age of the individual, as well as to the powers of the digestive organs, is too little considered, and the evil consequences of this neglect are often evinced in the children of the wealthy classes, who are frequently allowed an unrestricted use of the most exciting kinds of animal food, than which there cannot be a greater error. By a too stimulating diet at this early age, the digestive organs become over excited; the biliary and other secretions connected with digestion are diminished; congestion of the abdominal circulation ensues; and the skin, sympathising with the irritation of the internal surfaces, becomes dry and harsh, and cutaneous eruptions, or copious perspiration are common consequences. The ultimate effect is often tuberculous disease, which is generally attributed to imperfect nourishment; and on this erroneous view steel and other tonics and stimulants are often prescribed, by which the evil is increased."

however, the quantity of food has been fixed at about 32 oz., or 2 lb. avoirdupois,\* and the result has been, that a smaller number have been found upon the sick list since the introduction of this regulation. If then the laborious British seamen can be kept in the best possible condition by two pounds, or two pounds and a quarter, of solid food, certainly a much less quantity would be proper for a gentleman in England, or in this country. This quantity we might fix perhaps at from one pound to one and a half. It is said, and I apprehend on very good authority, that the soldiers of the American army are allowed not less than four pounds of solid and four pounds of liquid a day. What a multitude of diseases in our Army might be traced to this bountiful supply of food!

## 2. EXERCISE.

The remarks on exercise are sufficiently extended in the text for the general objects of society, but there is a class, which has risen into existence within a few years, to

\* Vide Carpenter's Human Physiology, p. 332.

whose condition I feel myself called on to advert. A large number of persons in this country have lately engaged in the labor of of manufactories. The establishments, in which these labors are carried on, are, it is well known, better regulated than those in the Old World, and the amount of health of the individuals employed in them is undoubtedly greater. The operatives necessarily employ sufficient bodily exercise.

Notwithstanding these favorable circumstances, no one, I think, will maintain, that they possess so robust an appearance, and enjoy so high a degree of health, as do the members of families, both male and female, who are occupied in the pursuits of agriculture. The difference in the influence of these occupations is attributable to the difference in the variety of labor, and to that in the atmosphere which is respired by these classes. As to the former of these circumstances, no important changes can be expected, but in the latter much improvement may be made.

The operatives in our manufactories, especially females, ought to form and pur-

sue a regular plan of exercise in the open air during the intervals of labor. This plan, I am aware, will seem to impose on them an additional burden, but the practical effect would, I am confident, be beneficial. A walk abroad two or three times in the day, at all seasons, would bring into action other muscles than those, which are usually exerted in their daily toil, would give fresh vigor to the circulation of the blood, and inspire them with new cheerfulness in their monotonous routine. In this way it may be hoped that an impending physical degeneration may be avoided in a large and interesting portion of our society.\*

\* I deem it right to say, that on making the reflections above stated to my friend, William Appleton, Esq. on whose experience and power of observation I have great confidence, he remarked, that it seemed to him quite impracticable for the fatigued operative to take additional exercise of any description. There is much ground for this opinion, no doubt; still I cannot but hope, that the plan I have recommended may be practised on in a great number of cases.



## 3, MODE OF SLEEPING.

The manner in which children sleep, will readily be acknowledged to be important, yet very little attention is paid to this matter. Children are crowded together in small and unventilated rooms, often two or three in a bed, and on beds composed of half prepared feathers, from which issues a noxious effluvia, infecting the child at a period when he is least able to resist its influence. So that in the morning, instead of feeling the full refreshment and vigor natural to the age, he is pale, languid, and for some time indisposed to active exertion.

The rooms in which children are brought up, should be well aired, by having a fire-place, which should be kept open the greater part of the year. There never should be more than one in the same bed, and this remark may be applied with equal propriety to adults. The substance on which they lie, should be hair, thoroughly prepared, so that it shall have no bad smell; in winter it may be of cotton, or of hair and cotton. It would be very desirable, however, when-

ever practicable, to place them in separate apartments, as well as separate beds.

It has been just said, that adults as well as children had better employ single instead of double beds; this remark is intended to apply universally. The use of double beds has been very generally adopted in this country; perhaps in part as a matter of economy, but this practice is objectionable for more reasons than can be stated here. Two or three may, however, be given.

1. The interference of one individual with the tranquility of the other.
2. The inhalation of matters excreted by the breath and by the skin.
3. The communication of cutaneous diseases, and even of insects, such as ascarides, and other vermin, from one to the other.
4. There are moral considerations, of a high order, which are opposed to the common arrangement.

#### 4 THE EXTERNAL USE OF WATER.

In this discourse I have strongly recommended the external use of cold water, and especially of the shower bath. Since it was

delivered, the employment of cold water externally in this country has been very much extended ; the shower bath especially has been introduced into a great number of families. There is room, however, for a very great extension of this practice, and a sense of its utility leads me to make some further remarks on it.

The application of cold water to the human body is beneficial principally in two ways ; first, as a purifier ; second, as a tonic ; 1st, it purifies the body by removing from its surface those excretions, which are continually poured out. The skin is an outlet, by which are discharged matters necessary to be thrown out of the system, for if retained, they would produce disease. These matters cause an incrustation over the surface of the skin, and this to a certain extent obstructs the little orifices, through which these exhalations take place. Physicians and surgeons are in the habit of observing deplorable instances of filthy concretions on the skin of poor patients, and this kind of neglect, unfortunately, is not wholly confined to the lower classes.

Besides these exhalations, the surface of the skin becomes more or less charged with cuticular exfoliations, which ought to be daily removed. The linen taken from the body of a poor person is sometimes seen to shed a shower of flakes of separated cuticle. The regular removal of these substances not only gives a more free outlet to cutaneous exhalation, but the act by which they are removed, also serves to promote the healthy action of the capillary vessels of this organ.

2d. The effect of cold water as a tonic is well known. The refreshing influence of water applied to the face, neck, hands, and arms, is a matter of general experience. The operation of cold water, applied to the whole surface of the body, is to produce an agreeable and refreshing sensation. This is followed by a glow more or less considerable, depending partly upon the difference between the temperature of the water and that of the body, and partly on the state of the body itself, to which the application is made. Immersion of the hand, or any other part of the body, in cold weather in tepid

water is followed by a sense of chilliness, while immersion of the same part, for a limited time, in iced water is followed by a sensation of positive heat. Immersion of part, or the whole of the body in cold water causes an increase of vigor. This is particularly obvious in hot weather. When one, who is exhausted with heat and fatigue, plunges into the cold water, or receives the affusion of it over the whole surface of the body, the languid frame is immediately invigorated and prepared for new labors. This change is probably attributable to a uniform contraction of the small vessels, and a more regular flow of blood through the relaxed organs, thus reviving their vigor.

In the same way congestions, by which the vital actions are impeded, are removed, and this not only in the external or cutaneous portion of the body, but also by the reflex nervous action of Dr. Marshall Hall, or sympathy as it has been formerly called, in the great central organs, the heart, lungs, stomach and intestines. Thus a great many diseases may be removed in the incipient stage ; for vascular congestions, or accumu-

lations of blood in particular vessels, by which the circulation is obstructed, constitute the origin of a great number of diseases. All those who have been in the habit of using cold water know, that an incipient catarrhal affection often disappears on its judicious application to the surface of the body. This disease is a congestion of the blood in the vessels of the membrane lining the nostrils, trachea, and lungs, arising in this instance from the application of cold air to the surface of the body. When cold water is applied to the skin it produces increased circulation in this part, and the blood is thus diverted from the internal organs. A similar train of occurrences takes place in the germination of many diseases. The effect of the judicious application of cold water to the surface of the body is, therefore, to relieve temporary languor, remove incipient disease, and give permanent tone to the animal system.

It will naturally be asked, what mode is the best for the application of cold water? Sponging the body over with the coldest water is a very convenient mode, and one

which may be resorted to with great facility. The use of the cold hip-bath is valuable for affections of the back, and of the organs in the lower part of the trunk of the body. A sudden plunge of the feet into cold water removes swelling of the veins and absorbent vessels, and prevents accumulations in the cellular membrane.

I am inclined to think, that the most convenient and efficient mode of producing the beneficial effects of cold water on the whole body is by the shower bath. This was recommended by me in the preceding lecture of 1830, and all that I have seen of its effects since that time, has led me to the belief that it has an efficacy superior to that of other modes. The impulse of the water gives a general shock to the system, causes a sensible increase of strength at the moment, and is followed, when the water is sufficiently cold, by a general and delightful glow. In hot weather, I personally employ the shower-bath with great freedom; I resort to it three or four times a day, and find it to produce great refreshment from the debilitating effects of heat. I

am not able to ascertain the extent of the use of cold affusion among our countrymen in the south, but I have no doubt, that relief might be obtained from the effects of excessive heat by a frequent judicious resort to this delightful application.

The use of the *douche* is worthy of some remark. This is a continuous stream of water poured with a certain degree of force on some one part of the body. It is generally used for medicinal purposes, and is one of the most powerful remedies for the relief of many local diseases. But it may also be employed as a means of invigorating a weak part of the body, and is therefore particularly useful in weakness of the back and of the limbs, especially the joints, of the eyes, etc. A continuous fine stream of cold water, driven upon the naked eyeball, is submitted to after one trial without any reluctance, and is a most efficient application for weakness of the eyes and chronic inflammation. The *douche* is easily arranged by connecting a flexible tube, with a stop-cock, from ten to twenty feet in length with a reservoir placed at that dis-



tance above it. This reservoir may be a cask, a cistern, or any other convenient receptacle. I have recommended the douche with a degree of advantage in many internal as well as external weaknesses.

For children, either the shower-bath, or the sponge-bath is convenient, beginning at the earliest period of life. The infant thus becomes accustomed to have its head wet, and the habit being formed no inconvenience results from the retention of moisture in the hair, though this should be removed by friction with cloths and brushes, as soon as practicable. The dipping, although some children bear it well, generally produces alarm and aversion, while the other plans gradually become grateful and desirable to the child.

Of late years the apprehension of the external use of cold water has greatly diminished, and this practice, the result of advanced civilization, has very much increased. The institution of Preisnitz, at Graeffenburg, has done service, by showing to what extent the use of water may be carried without always producing fatal dis-

eases. In the preceding remarks, I do not mean to recommend the use of this valuable agent in the modes proposed by Preisnitz and his followers. I have always advised, and still advise, a very frequent use of cold water, perhaps further experience may justify the use of it to a greater extent than what my observations have hitherto authorized me to recommend.\*

#### 5. FRICTION.

The external use of cold water almost necessarily involves that of friction, which may also be employed independently. The object of this is to increase the flow of blood to the external parts, and thus to relieve the internal organs of too great an accumulation of the circulating fluid. It has been already stated, when speaking of the use of water, that congestion or inordinate partial accu-

\* The hydropathic practice has unfortunately been combined with homœopathy in this part of the country. There is, however, no proper connection between them. Hydropathy in a reasonable extent is supported by good sense and exact observation; homœopathy is in opposition to both.

mulation of blood is the primary cause of many diseases. An instance may be specified in the common pain in the side. This, we know, will, in persons subject to it, be brought on by sitting long in a confined posture, as, for example, in writing for too long a time. It sometimes produces very acute pain, and even may go on to inflammation of the pleura. An individual who is affected in this way, naturally applies his hand to the part, and attempts by friction to dissipate the pain. When this is accomplished, it is done partly by exciting the action of the congested vessels, and partly by increasing the circulation in other textures near that affected, and thus abstracting the accumulated blood from the latter. Friction over the general surface of the body, by equalizing the circulation, contributes to its health and vigor : by exciting a uniform and healthy action in any one part, it serves to give vigor to this part.

#### 6. TOBACCO.

While the general means for the preservation of health have been materially ad-

vanced in our society by attention to exercise, by the external use of cold water, by moderation in food, by the curtailment of dinner parties, and more especially by the fast extension of abstinence from stimulant and intoxicating drinks, there is in one particular a decided and unhappy deterioration of our social habits, I refer to the increased use of tobacco.

Of the three modes of using tobacco, *smoking* is that which seems to have insinuated itself most extensively among the young men of our community. Tobacco, employed in this way, being drawn in with the vital breath, conveys its poisonous influence into every part of the lungs. There the noxious fluid is entangled in the minute spongy air-cells, and has time to exert its pernicious influence on the blood, not in vivifying, but in vitiating it. The blood imbibes the stimulant and narcotic principle, and circulates it through the whole system. It produces in consequence a febrile action in most individuals, and especially in those of a delicate habit. Where there is any tendency to phthisis and tubercular de-

posit in the lungs, the debility of these organs, consequent on the use of tobacco in this way, must favor the deposit of tuberculous matter, and thus sow the seeds of consumption. This practice impairs the natural taste and relish for food, lessens the appetite, and weakens the powers of the stomach. As to the pleasure produced by it, it is, I believe, a well known fact, that a person smoking in the dark is often unable to determine whether his cigar is lighted, or not.

*Snuff* received into the nostrils to some extent enters the cavities opening from them, fills those cavities, and makes a snuff-box of the olfactory apparatus. The voice is consequently impaired, sometimes to a remarkable degree. I knew a gentleman of the legal profession, who from the use of snuff occasionally lost the resonance of his voice, and the power of speaking audibly in Court. Moreover, portions of this powder are conveyed into the lungs and stomach, and exert on these organs their deleterious effects.

The worst form, in which tobacco is

employed, is in *chewing*. This vegetable is one of the most powerful of narcotics ; a very small portion of it, say a couple of drachms, and perhaps less, received into the stomach might prove fatal. When it is taken into the mouth in smaller portions, and there retained sometime, an absorption into the system of part of it takes place, which has a most debilitating effect. If we wished to reduce our physical powers in a slow, yet certain way, we could not adopt a more convenient process than that of chewing tobacco. Who is there among the chewers of tobacco, who has not felt that deadly sickness, which it occasionally produces ? Those who have experienced these effects will not, I think, deny its great power of relaxing the whole animal system.

The more limited and local effects are indigestion, fixed pains about the region of the stomach, in some cases looseness of the bowels, torpor of these parts, debility of the back and of the organs in the lower part of the trunk of the body. In regard to this last point much might be said of a striking character. To the consequences already

mentioned, we may add affections of the brain, producing vertigo, (an effect well known to most of those who are in the habit of chewing tobacco,) and also affections of the mouth generating cancer.

Tobacco is by some persons recommended as beneficial to the teeth, but while it can have no material effect in preserving the bony substance of the teeth, it has a real influence on their vitality, by impairing the healthy action of the gums. These, and also the adjacent parts, are very subject to cancer, particularly the tongue and lips. For more than twenty years back I have been in the habit of inquiring of patients, who came to me with cancers of these parts, whether they used tobacco, and if so, whether by chewing or smoking. If they have sometimes answered in the negative as to the first question, I can truly say, that to the best of my knowledge and belief, such cases of exemption are exceptions to a general rule. When, as is usually the case, one side of the tongue is affected with ulcerated cancer, the tobacco has been habitually retained in contact with this part. The

irritation from a cigar, or even from a tobacco-pipe, frequently precedes cancer of the lip. The lower lip is more commonly affected by cancer than the upper, in consequence of the irritation produced on this part by acrid substances from the mouth. Among such substances, what is more likely to cause a morbid irritation terminating in disease, than the frequent application of tobacco juice?

No one, I suppose, will understand, that I intend to say, that tobacco is a specific for the production of cancer. I mean to say, that this substance by its frequent application irritates and diseases the parts, to which it is applied, in the same way that any other acrid substance would do by very frequent application. The want of attention to cleanliness often connected with this practice, and the consequent lodgement of the particles of tobacco on the surface of the lip has, as already suggested, a great influence in these cases. This leads me naturally to inquire, whether those, who have been in the regular habit of general and exact cleanliness, are so often affected



with external cancer as others? My experience would lead me to believe that they are not so, but I do not feel myself authorized to enter here into details upon this subject.

#### 7. CONCLUSION.

Perhaps it may be useful to add some hints in a condensed form for the preservation of health.

Children, as soon after birth as practicable, should be washed, or rather dashed with a sponge and cold water two or three times a day, and well rubbed afterwards. This practice is to be continued summer and winter, except in case of illness, and even in most cases of febrile disease it may be used with advantage under medical direction.

The food of young infants should be administered to them at stated periods, and not whenever they cry. Children very frequently cry from having taken too much food. A good rule for general use is, to give nourishment to the child once in about three hours. From the time of weaning

until the first dentition is over, their best food is bread and milk, coarse bread is better than fine in most cases. After the first dentition a greater variety of food may be employed, but animal food may perhaps be advantageously omitted until after the most critical period of the second dentition.\*

During the time of school education every kind of wholesome food is proper, but it should be so plain as not to encourage the propensity to take a greater quantity than the power of the stomach can control. The disposition to drink should be discouraged, and when drink is employed, it should be water. Sugar in the liquid and solid form should be avoided in a great degree. The stomach will bear a certain amount of saccharine matter without bad consequences, but when this amount is habitually exceeded, the healthy state of the blood be-

\* The first hint, which I received on this point many years ago, was from my friend, Dr. James Jackson, late Professor of Theory and Practice of Medicine in Harvard University,—an authority in my estimation as high as that of any living physician.

comes impaired. Moreover, some of the most dangerous attacks of cramp in the stomach and of colic, which I have seen, have arisen from the too free use of sugar in various forms. The sugar used in tea has often, within my knowledge, been the cause of evils attributed to the injurious influence of the tea, in which it was conveyed.\* All stimulants should be avoided. Happy are they, who have never learned the use of them in any way! especially of alcohol in its different forms! their lives may be

\* "Sugar exists in considerable quantity, and but little complicated, in many plants. Moreover, the greater number of the other saccharine principles are capable of being converted into crystalized sugar, by artificial processes. Sugar is the only crystallizable product employed in considerable quantity as an aliment, and by the perfectly healthy stomach seems to be readily assimilated. There are, however, certain states of disease in which this organ appears to lose, in a great measure, the power of assimilating this principle, and in such states of disease, sugar consequently is ill adapted as an aliment. Indeed, on the whole, though sugar, as we have said, is capable of being assimilated in large quantity, it is doubtful if mankind have been the gainers, except in convenience, by employing it in a form in which it is the furthest possible removed from organization and life."—*On the Nature and Treatment of Stomach and Urinary Diseases, etc.*; by W. PROUT, M. D. F. R. S. London, 1840, p. viii.

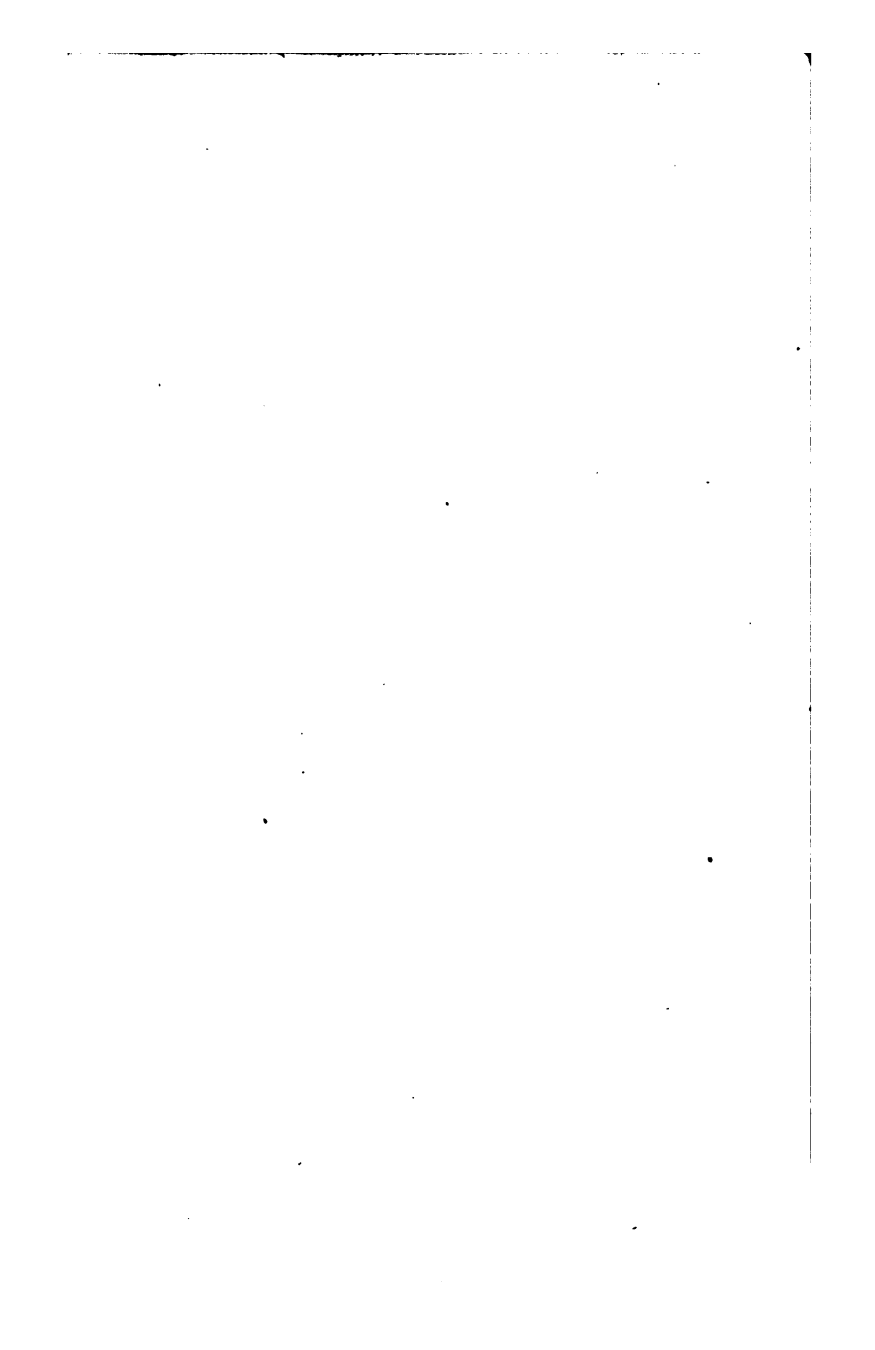
insured, and at comparatively a low premium !

Exercise during the early period of life should be regularly enforced, or rather the natural disposition to exercise in young children of both sexes, instead of being repressed, should be encouraged in every variety of form. Exercise, when practicable, should take place in the open air ; even young infants should be carried into the air soon after birth, and should be taken out daily. Every family possessed of a moderate competence should have a play-room devoted to the use of their children in bad weather. There should be, during the whole period of their education a balance between the hours of exercise and the hours of study ; the younger the subject, the greater must be the proportion of physical action.

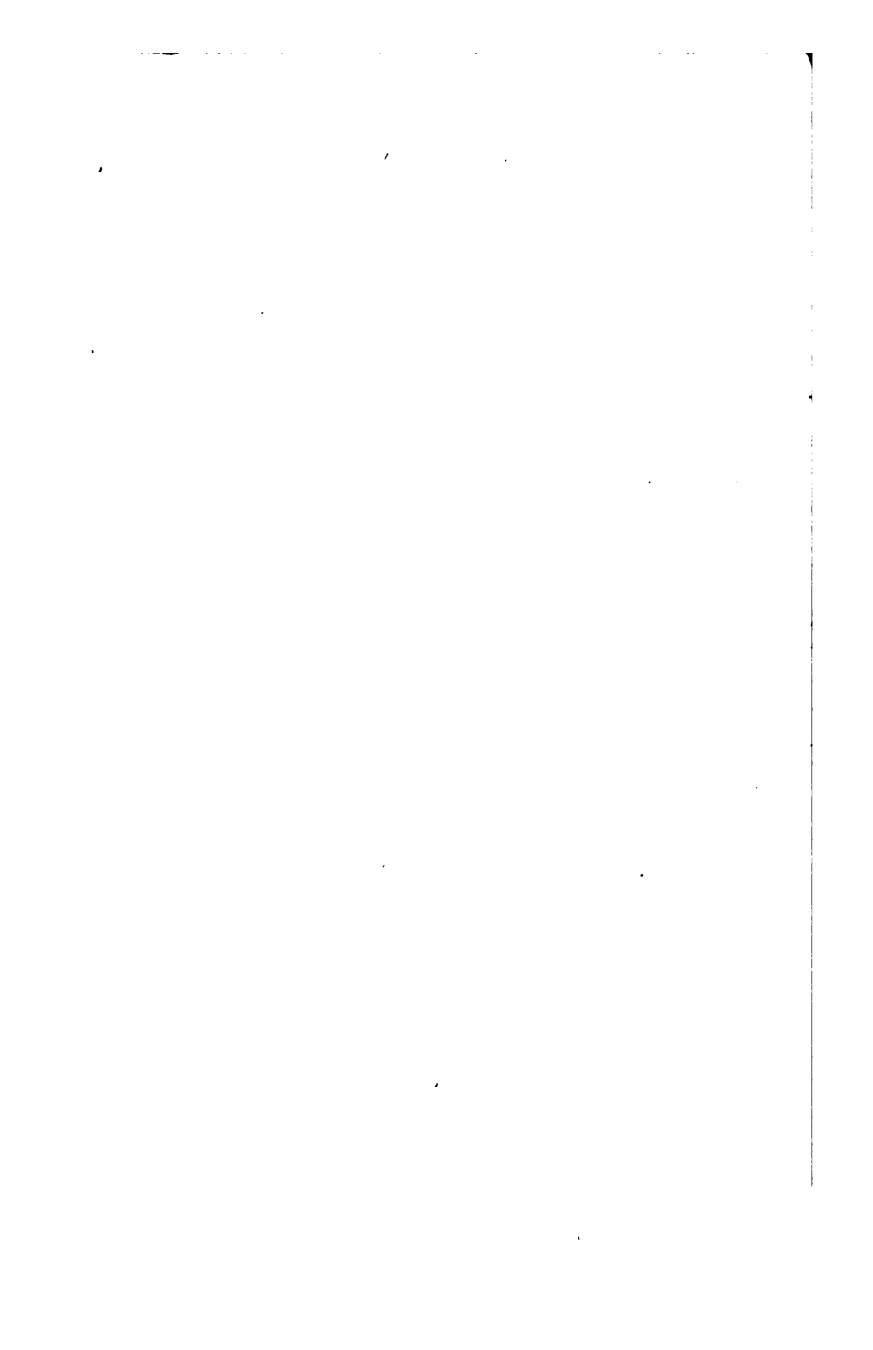
A great number of young persons, especially of the male sex, lose their health from a vitiated imagination ; the prevention and cure of this should be one of the greatest objects of attention to parents and instructors.

When, by the combined influence of na-

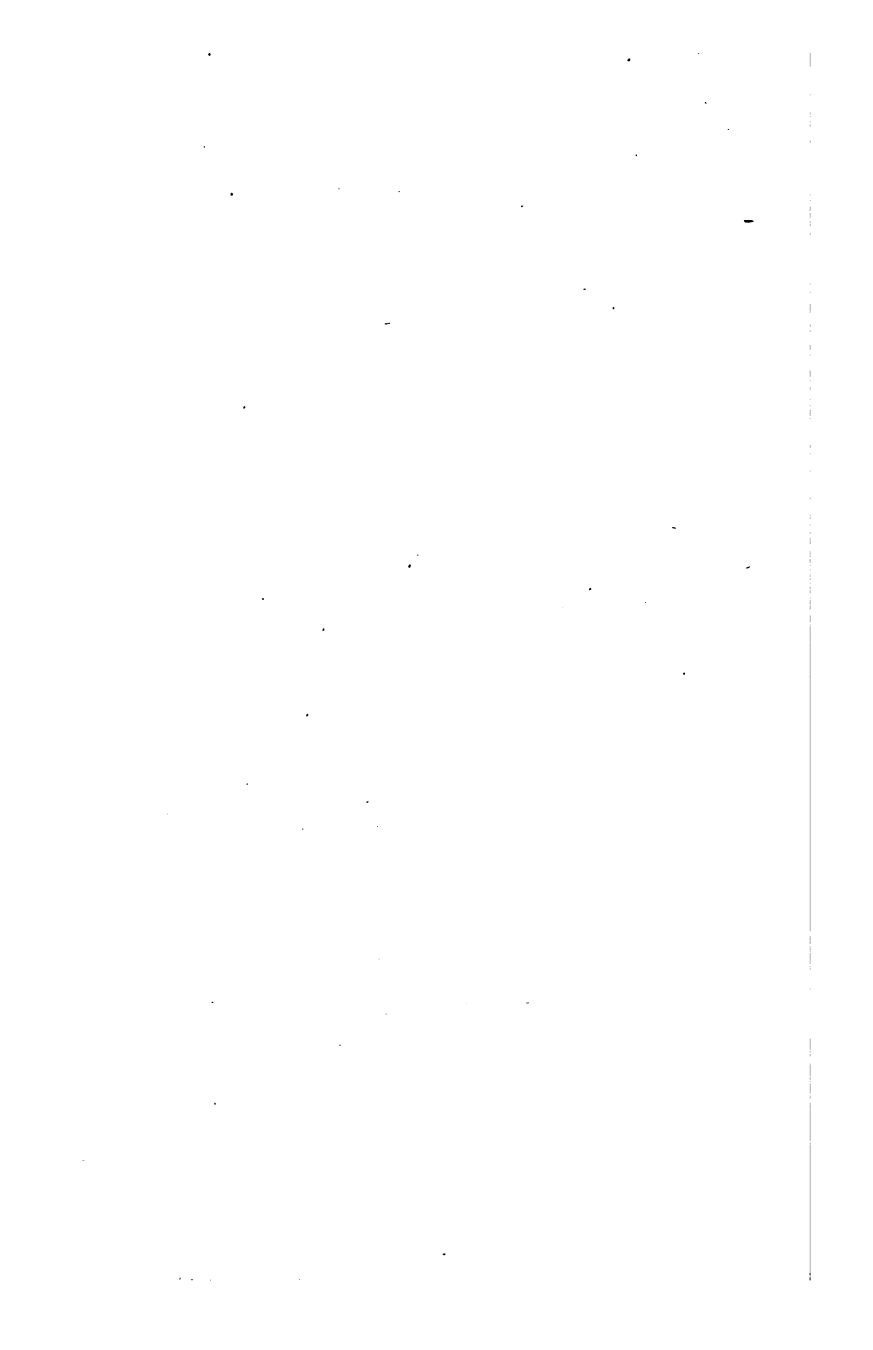
ture and education, the constitution has become developed in its full power and strength, it depends on the individual to retain health and avoid disease. In other words, it may be considered as a general law, that health may be preserved to a late period of life by the use of those things, which are friendly, and the avoidance of those which are noxious. Most diseases are the consequences of violations of the laws of nature, sometimes the result of ignorance, more frequently of inattention. Let there be a due balance between the bodily and mental exercise, I speak of the educated division of society, a reasonable regulation of the amount of food and drink, the omission of all extra stimulants, and a removal by the means indicated of all noxious agents, such, for example, as a want of personal cleanliness, and we might calculate on avoiding a great number of the diseases which ordinarily harass and shorten our lives; we might, if we escaped accident, expect to attain a comfortable old age, and a death free from suffering.












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